Diabetes Prevalence and Prevention in African American and Hispanic Populations: A Review of Diabetes Research and Prevention Programs

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Diabetes Prevalence and Prevention in African American and Hispanic Populations: A Review of Diabetes Research and Prevention Programs

This report consists of a literature review of diabetes research and diabetes prevention programs in African American and Hispanic populations and a review of diabetes prevention curricula and evaluation tools. In addition, the report includes a summary of the results from a health ministries survey administered in three Las Vegas churches through the Healthy Hearts Project. The Healthy Hearts Project was a CDC REACH 2010 Demonstration Project focusing on cardiovascular health in African Americans in Las Vegas, Nevada. The original goal of this report was to assist the Healthy Hearts Project in their planning to continue cardiovascular disease and diabetes prevention programming with African Americans and expanding their programming to include the Hispanic community. Unfortunately, the Healthy Hearts Project did not receive funding to continue their project so this report will not be used as it was originally intended. However, it may be of use to the Healthy Hearts project if they seek funding in the future or to others who wish to pursue diabetes and cardiovascular prevention in the African American and/or Hispanic populations. During this past year of funding, the Healthy Hearts Project did not deliver any diabetes prevention programming; therefore, this report will not include any results from Healthy Hearts diabetes-related programming. Results from the health ministries surveys will be included in this report in lieu of diabetes prevention evaluation data.

Current Status of Racial and Ethnic Disparities in Diabetes and Cardiovascular Health

Diabetes and cardiovascular disease are serious health problems for African Americans and Hispanics. Based on data from the REACH 2010 Risk Factor Survey (RFS), African Americans (12.5%) and Hispanics (11.4%) have higher rates of diabetes compared to the general population (6.1%) (Liao, Tucker, & Giles, 2004). 2006 REACH 2010 Risk Factor Survey results for African Americans in Las Vegas (RFSLV) indicate 17% had been told by a doctor that they have diabetes, compared to 8% of Nevadans and 10.7% African American Nevadans as found in the 2007 BRFSS data (Christiansen & Rye, 2007; CDC, 2007). The 2005 Community Health Survey (CHS) administered in Las Vegas churches with predominantly African American parishioners found 19.3% reported having diabetes (Rye, Christiansen, & Mitchell, 2006). The REACH 2010 Risk Factor Survey conducted in Las Vegas did not include Hispanics. However, 2007 BRFSS data shows 4.4% of Hispanics in Nevada reporting a diabetes diagnosis (CDC, 2007).

While the current rates of diabetes among African Americans and Hispanics are disconcerting, the future looks even bleaker. According to the CDC, it's estimated that nearly half of African American and Hispanic children will develop diabetes (Narayn, 2003). Another study found that African American and Hispanic children were almost eight times as likely to be at risk for developing type 2 diabetes than white children (Urrutija-Rojas & Menchaca, 2006).

Table 1. Comparison of Diabetes Prevalence Statistics

	General U.S. Population	General NV population	African American	Hispanic
RFS	6.1% (BRFSS 2001)	--	12.5%	11.4%
RFSLV	--	--	17.0%	--
BRFSSNV	8.1% (BRFSS 2007)	8%	10.7%	4.4%
CHS2005	--	--	19.3%	--

Rates of cardiovascular disease (heart attack or myocardial infarction, angina or coronary heart disease, or stroke) also are higher among African Americans (9.4%) and Hispanics (8.3%) than the general population (7.6%), as are rates of high blood cholesterol and hypertension (see table 2) (Liao, Tucker, & Giles, 2004). The percentage of African Americans reporting hypertension in the Las Vegas REACH 2010 Risk Factor Survey was substantially higher (47.8%) than the percentage of Nevadans reporting hypertension in the 2007 BRFSS data (27%) (Christiansen & Rye, 2007; CDC, 2007).

Table 2. Comparison of High Cholesterol and Hypertension Prevalence Statistics

		General U.S. Population	General NV population	African American	Hispanic
High Cholesterol	RFS	27.2% (BRFSS 2001)	--	29.9%	35.6%
	RFSLV	--	--	39%	--
	BRFSSNV	7.5% (BRFSS 2007)	37%	--	28.7%
	CHS2005	--	--	50.7%	--
Hypertension	RFS	24.8% (BRFSS 2001)	--	35.9%	26.8%
	RFSLV	--	--	47.8%	--
	BRFSSNV	7.5% (BRFSS 2007)	27%	--	14.7%
	CHS2005	--	--	35.3%	--

A variety of factors contribute to the higher rates of diabetes among Hispanics and African Americans compared to whites. Studies have found that Hispanics tend to have a genetic predisposition for diabetes. A “thrifty genotype” has been found in Mexican Americans which causes a very efficient calorie storage system. This works well as a survival mechanism but can lead to obesity and type 2 diabetes when food is plentiful (Carter, Pugh, & Monterrosa, 1996). Higher percentages of African Americans and Mexican Americans have a family history of diabetes compared to non-Hispanic whites (Annis, Caulder, Cook, & Duquette, 2005). Family history of diabetes is a risk factor for developing diabetes not only due to hereditary factors, but also to environment and health-related behaviors often shared among family members (Annis, et al., 2005).

Obesity is another risk factor for developing type 2 diabetes that disproportionately affects African Americans and Hispanics. These are two of the most obese groups in the United States with National BRFSS data showing 36.7% and 26.6% of African Americans and Hispanics, respectively, in the obese body mass index category (BMI >30 kg/m^2), compared to 25.6% of whites (CDC, 2007). In Nevada, 27% of Hispanics are obese compared to 24% of whites (CDC, 2007). According to 2005 RFS data, 35% of African Americans in Las Vegas are obese (Christiansen & Rye, 2007).

Linked to the problem of obesity is a lack of physical activity among Hispanics and African Americans. Staten, Bronson, Peña, & Elenes (2005) found that Hispanics were less likely to engage in physical activity than whites. Nationwide, 51.8% of whites met the physical activity recommendation while 41.3% of African Americans and 44.5% of Hispanics did (CDC, 2007). The percentage of Las Vegas African Americans meeting physical activity recommendations was even lower at 38% (Christiansen & Rye, 2007).

Cultural health beliefs about diabetes can impact the effectiveness of diabetes prevention and management efforts among African Americans and Hispanics. In their study, Skelly et al. (2006) found that some of the African American beliefs about diabetes were that it ran in families, and that it resulted from eating too much sugar and not taking care of oneself. Additionally, many study participants did not think that weight and physical activity were linked to diabetes and were not sure if diabetes could be prevented.

Latino health beliefs tend to be fatalistic, believing that things will happen to one because of fate (Spector, 1991). Additionally, Latinos often attribute control of health and illness to powerful others, such as God (Mirowsky & Ross, 1984). A national survey of Latinos found that 42% agreed that it does one no good to plan for the future since one does not have control over it (Brodie, Steffenson, Valdez, Levin, & Suro, 2002). With respect to diabetes, a study of Latino explanatory models of diabetes among Latinos without diabetes found several common beliefs about diabetes. For example, some believed that everyone has diabetes within them but it may not be developed in everyone; strong emotion, such as a fright, could cause diabetes; and, eating too much sugar causes diabetes. Some respondents believed that diabetes is hereditary but if a parent has it and controls it, then the children might not get it; diabetes can be a result of an angry personality; diabetes causes people to lose weight; and diabetes cannot be prevented (Arcury, Skelly, Gesler, & Dougherty, 2004). Latino beliefs about preventing diabetes included that it could be prevented by staying calm and controlling emotions, seeing the doctor, watching one's diet and avoiding sugar. Some participants believed that being overweight was linked to diabetes while others did not. (Arcury et al., 2004).

There are some racial and ethnic disparities related to health care which may affect the differing rates of diabetes and diabetes-related complications among African Americans and Hispanics (LeMaster, Chanetsa, Kapp, & Waterman, 2006). Kirk, Bell, Bertoni, et al. (2005) found lower rates of diabetes preventive care among Latinos and African Americans than whites including eye examinations, influenza vaccinations, and lipid-profile testing. Compared to whites, African Americans and Latinos had more

hospitalizations for diabetes and other chronic conditions which can be prevented and controlled by good primary care. In addition, in 2003 African Americans were five times more likely to be hospitalized for uncontrolled diabetes or hypertension than non-Hispanic whites, while Hispanics were 3.6 times more likely to be hospitalized for diabetes than whites (Agency for Healthcare Research and Quality, 2006). Hispanics are the least likely racial group to visit a health care professional for annual diabetes preventive care measures (American Association of Diabetes Educators, 2001).Compared to non-Hispanics, Hispanics with diabetes were 40% less likely to have been advised by a health professional to exercise more (Morrato, Hill, Wyatt, Ghushchyan, & Sullivan, 2006)

Diabetes Prevention and Health-Promotion Programs

Research efforts by the Diabetes Prevention Program, as well as other studies, have found that diabetes can be effectively prevented through programs that promote the modification of eating and exercise habits of participants (Ryan & Smith, 2005; Knowler, Barrett-Connor, Fowler, Hamman, Lachin, Walker, et al., 2002; The Diabetes Prevention Program Research Group, 2004). Several keys to successful programs for African Americans have been found through research and experience delivering programs. A popular way to deliver programs to African Americans has been through churches. The Healthy Hearts project was based on this delivery model, although it also branched out into the community as the project progressed. Boltri, Davis-Smith, Zayas, Shellenberger, Seale, Blalock, & Mbadinuju (2006) conducted focus groups with African Americans in churches and gathered suggestions for how best to deliver diabetes prevention programs. These suggestions included holding small group workshops with hands-on learning activities; presenting testimonials from people with diabetes; showing video presentations; having a buddy/support system in place; involving the church food committee; and using the pastors to increase awareness and participation. Williams, Auslander, de Groot, Robinson, Houston & Haire-Joshu (2006) emphasize the importance of developing programs with input from the community; reflecting an Afro centric view; emphasizing group needs as more important than individual needs; including various modes of learning, such as visual, tactile, and audio; and promoting positive approaches. Although many programs targeting African Americans were reviewed for this report, few were focused primarily on diabetes prevention. Since the Healthy Hearts Project already has several other programs addressing topics such as physical activity, hypertension, nutrition, and stress, only a few programs for African Americans were reviewed in this report.

Programs with a focus on a Hispanic population tend to emphasize group support and include culturally relevant examples (Ryan & Smith, 2006). Several of the programs for Hispanics had a home-based approach, while some were based in the community or in churches. A common element in many of the programs was the use of lay community health workers called *promotores de salud*. Many of the programs were designed for Hispanic women. Hispanic women tended to prefer group activities and some preferred to be in groups with women only (Van Duyn, McCrae, Wingrow, Henderson, Boyd, Kagawa-Singer, et al., 2007). A heart health program for Latinos found success using

informal group discussions as an education strategy, materials with family-related themes, as well as humorous *telenovela* style public service announcements to deliver messages about heart disease (Alcalay, Alvarado, Balcazar, Newman, & Huerta,1999). Lopez & Castro (2006) found differences in program results based on the level of acculturation of participants, highlighting the importance of taking acculturation into account when designing programs for Latinos.

Eat Well, Live Well (Williams et al., 2006). This program was designed to promote healthy eating in African Americans. It uses the stages of change theory along with principles of community organization. The program focuses on the needs of the participants and reflects community culture. The Staging of Eating Patterns Assessment is used to assess readiness to make or maintain changes in five dietary patterns. *Potential for Healthy Hearts*: This program does not focus specifically on diabetes prevention. Healthy Hearts has several other classes designed for African Americans that address healthy nutrition that have been working well.

National Institutes of Health (NIH)-Diabetes Prevention Program (DPP) (Davis-Smith, Boltri, Seale, Shellendberger, Blalock & Tobin, 2007; Boltri, Davis-Smith, Seale, Shellenberger, Okosun, & Cornelius, 2008). The National Institutes of Health (NIH)-Diabetes Prevention Program (DPP) was adapted and implemented in two different versions for use with African Americans in church-based programs. The NIH-DPP is an individualized lifestyle program which researchers changed into an interactive group program. In one church, they used a 16-session version of the curriculum while in another church they condensed the program into six sessions. The program includes goals related to weight loss and exercise and teaches participants about improving their diets, lowering fat intake, increasing exercise, and changing behavior for a healthy lifestyle. Results were positive for both versions of the program. Participants experienced reductions in weight, blood pressure and fasting glucose. *Potential for Healthy Hearts*: This program has good potential for Healthy Hearts. It has an emphasis on diabetes prevention so it would be a good replacement for Ounce of Prevention. It has been piloted successfully with African Americans in a church setting. However, evidence does not yet exist as to the cultural appropriateness of the curriculum for African Americans. It would have to be reviewed by members of the community to determine how appropriate it would be for African Americans in Las Vegas.

Change for Life/Cambia tu vida (Ryan & Smith, 2006). This diabetes and cardiovascular disease prevention program has been used with both African Americans and Hispanics. It is a group-based intervention which uses the Stages of Change Model. The program consists of six, two-hour weekly classes. To adapt the program for African Americans and Latinos, the developers de-emphasized independent self-help and focused on group support that encourages individual change. In addition, they included more culturally relevant examples. This program emphasizes participant choice in that participants choose which behavior (s) to change. Participants in the program were provided with child care and transportation. After the first year, members of the community were trained to deliver the workshops. Classes for Latinos were delivered by a native Spanish speaker and mainly used a home-based group support model.

Classes for African Americans tended to work best using a faith-based approach. The evaluation included a pretest and posttest stages of change questionnaire, posttest satisfaction questionnaire, and a three-month follow-up assessment of progress towards changing behavior. Participants were satisfied with the program and reported positive changes in their behaviors. *Potential for Healthy Hearts:* This program has good potential for use in the Healthy Hearts project for both the African American and Latino populations. It has been tested with both populations; and, the delivery mode and setting of the program can be adjusted based on the target population. A potential concern for use with the African American population is whether the literacy level of the curriculum might be too low. The population who attends Healthy Hearts events tends to be well-educated. One reason the project discontinued use of the Ounce of Prevention curriculum was that they felt the language level was too low for participants. The Ounce of Prevention Curriculum was originally developed for use with Latino immigrants as well. In that respect, Change Your Life/Cambia Su Vida might have the same problems as Ounce of Prevention.

¡Sí Se Puede! (Kelley, Baldyga, Barajas, & Rodriguez-Sanchez, 2005). This program was designed to prevent and control diabetes in a Latino community. It was a community-based program that had many components such as health and diabetes education programs, walking clubs, nutrition education programs, health fairs, and media campaigns. Community members participated in media campaigns giving their testimonials about the program. Walking club members were encouraged to continue after the initial program ended. A unique strategy was to use existing ESL classes to deliver diabetes-related health education as a way to enhance the "ecological validity" of program by interweaving the intervention into existing settings. *Potential for Healthy Hearts:* Specific details about the curriculum used in the diabetes education programs are not available. However, some ideas from this program could be used in the Healthy Hearts Project. For example, incorporating diabetes-related health education into the existing ESL classes in the community might be a good way to expand the program to include Latinos.

Pasos Adelante/Steps Forward (Staten et al., 2005). Pasos Adelante is a 12-week program emphasizing chronic disease prevention, nutrition and physical activity. This program was delivered by community health workers called "promotores de salud." The curriculum "Su Corazon, Su Vida" from the National Heart Lung and Blood Institute was adapted to include diabetes. A unique aspect of this program is that each session includes time for physical activity, promoting the importance of incorporating physical activity into participants' lives. Walking clubs were formed as part of the program. One cultural belief the program tried to overcome was the perception that walking is only for people of low socioeconomic status. Classes were held in centrally located public places in the community. Participants decided the times for the classes. The curriculum is available online for free in both in English and Spanish. http://www.borderhealthsi.org/steps_pasos.htm The evaluation included a pre-post with questions about nutrition and physical activity. The program resulted in increases in the number of participants who walked and the number of minutes per week of moderate to vigorous exercise. In addition, a reduction in the consumption of sweetened drinks and

an increase in the number of servings of salad, vegetables, and fruits per week were found. *Potential for Healthy Hearts:* This would be a useful program to use to expand Healthy Hearts to the Hispanic community. The topics covered include diabetes, healthy eating, exercise, and other topics related to chronic disease prevention. It's designed for use with Hispanics so it's likely that little adaptation would be needed to implement the program in Las Vegas.

La Diabetes y La Unión Familiar: (Teufel-Shone, Drummond, & Rawiel, 2005). This is a family based diabetes support and prevention program. The program targets individuals who have diabetes but includes the whole family to help support the diabetic and prevent development of diabetes by others in the family. The program was delivered by promotores de salud. Five weekly educational modules were delivered by promotores de salud either in home visits or in a group class. The program also included several home vitis and a celebratory event for all the families. The program was successful in increasing knowledge of diabetes risk factors, increasing perception of family's ability to make positive behavior changes, reducing consumption of sweetened beverages, increasing the amount of family members' physical activity together, and increasing family support for one another. The curriculum is available for free at http://www.borderhealthsi.org . *Potential for Healthy Hearts:* This curriculum may work very well for a program like Healthy Hearts who wants to reach the Hispanic population. Although the program targets individuals with diabetes and their families, the content of the curriculum mainly focuses on healthy behaviors and preventing diabetes. The curriculum could be revised to focus completely on diabetes prevention, eliminating the parts related to diabetes management. The advantage of this curriculum over the Pasos Adelante curriculum is that it is shorter with a five-week educational portion and it focuses specifically on diabetes. The involvement of the family in the program is another positive aspect. This could help address the difficulties of getting men and younger people involved in diabetes prevention programs.

Recommendations for Diabetes Prevention Curriculum

Based on this review of the various diabetes prevention curriculum, we would recommend exploring the *National Institutes of Health (NIH)-Diabetes Prevention Program (DPP)* (Davis-Smith et al., 2007; Boltri et al., 2008) curriculum for use with African Americans as replacement for the Ounce of Prevention curriculum. Most likely this would need further adaptation for use with the African American population in Las Vegas churches. Many of the curricula in use in other programs around the country are more comprehensive chronic disease prevention programs which duplicate some of the other classes that were offered separately in the Healthy Hearts Project. This curriculum focuses specifically on diabetes but it may not be fully culturally appropriate.

To expand the Healthy Hearts Project to include the Hispanic population, we would recommend either the *Pasos Adelante* curriculum (Staten et al., 2005) or *La Diabetes y La Unión Familiar* curriculum (Teufel-Shone et al., 2005), depending on whether the desire was to have one comprehensive cardiovascular disease and diabetes prevention

curriculum or to have one focused more specifically on diabetes. Both programs would likely require little adaptation for use with the Hispanic population in Las Vegas.

Before selecting curricula, the Healthy Hearts Project or any other program should be sure to involve community members to review the curricula and plans for the program to ensure cultural appropriateness. Additionally, it is important to consider the education level of the target population in the community to ensure the curriculum is written at the right reading level. A limitation of the Healthy Hearts Project and many of the programs reviewed was that most participants were women. Strategies to recruit men as participants in the programs should be explored since African American and Hispanic men are also at high risk for developing type 2 diabetes.

Recommendations for Evaluation Tools

The evaluation/assessment tool used with the Ounce of Prevention curriculum was problematic due to the length and the difficulty participants had in understanding the items related to physical activity. We would recommend using a different tool with the new curricula. It would be prudent to use many of the same items used in the other Healthy Hearts workshops. These include items related to the stages of change and items about dietary behavior related to salt and fat intake. Other items related to dietary behaviors for diabetes prevention could be added from the evaluation of *La Diabetes y La Unión Familiar* curriculum(Teufel-Shone et al., 2005). In addition, items related to knowledge of diabetes risk factor and physical activity could be taken from the same tool. The same participant satisfaction tool used for all the Healthy Hearts workshops could be used for the diabetes class as well.

Health Ministries Needs Assessment Survey Results

The Healthy Hearts Project worked with various faith communities to create Health Ministries to support their congregation and encourage healthy lifestyles for their communities. The Health Ministry at three churches opted to conduct a basic needs assessment of their congregations' health education needs. The top three health concerns for respondents at all three churches were high blood pressure, diabetes, and high cholesterol. The percentage of respondents who had been screened for diabetes ranged from 27% to 51.9%. The percentage of respondents reporting they had been diagnosed with diabetes ranged from 11.4% to 31%. Top choices respondents made to deal with their medical conditions included praying, seeing a doctor, exercising more, and taking medication. When asked how a health ministry could support their health, top choices included offering classes and providing health-related literature. Full health ministries survey reports can be found in the appendix.

Conclusion

A greater percentage of African Americans and Hispanics compared to whites suffer from diabetes and cardiovascular disease. African Americans and Hispanics are more likely than whites to have a family history of diabetes, to be obese, and to be less

physically active. Prevention programs have been developed to address these issues in the African American and Hispanic population. We recommend the *National Institutes of Health (NIH)-Diabetes Prevention Program (DPP)* (Davis-Smith et al., 2007; Boltri et al., 2008) curriculum as a possible replacement for the Ounce of Prevention curriculum should the Healthy Hearts project continue in the future. Additionally, should the Healthy Hearts project or another project seek to start a diabetes prevention program for Hispanics, we recommend either the *Pasos Adelante* curriculum (Staten et al., 2005) or *La Diabetes y La Unión Familiar* curriculum (Teufel-Shone et al., 2005). We recommend using items from the other Healthy Hearts workshop along with some items from the evaluation of *La Diabetes y La Unión Familiar* curriculum(Teufel-Shone et al., 2005). A brief summary of health ministries needs assessment survey data also was included in this report.

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Appendix

Health Ministries Reports